



# Crastin® FR684NH1 NC010 (PRELIMINARY)

## THERMOPLASTIC POLYESTER RESIN

Crastin® FR684NH1 is a 25% Glass Reinforced, Flame Retardant, Non-Halogenated, Polybutylene Terephthalate

### Product information

Resin Identification	PBT-GF25FR(40)	ISO 1043
Part Marking Code	>PBT-GF25FR(40)<	ISO 11469

### Rheological properties

Molding shrinkage, parallel	0.5 %	ISO 294-4, 2577
Molding shrinkage, normal	1.2 %	ISO 294-4, 2577
Flow length	280 mm	
Flow length - pressure	110 MPa	
Flow length - width/thickness	2 mm	

### Typical mechanical properties

Tensile Modulus	9400 MPa	ISO 527-1/-2
Stress at break	95 MPa	ISO 527-1/-2
Strain at break	2.5 %	ISO 527-1/-2
Charpy impact strength, 73°F	43 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -22°F	46 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 73°F	7.5 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -22°F	6.8 kJ/m <sup>2</sup>	ISO 179/1eA
Poisson's ratio	0.34 -	

### Thermal properties

Melting temperature, 18°F/min	223 °C	ISO 11357-1/-3
Glass transition temperature, 18°F/min	55 °C	ISO 11357-1/-2
Temp. of deflection under load, 260 psi	205 °C	ISO 75-1/-2
Ball pressure test	220 °C	IEC 60695-10-2
CLTE, Parallel, -40-23°C	23 E-6/K	ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	29 E-6/K	ASTM E 831
CLTE, Parallel, 55-160°C	20 E-6/K	ISO 11359-1/-2
CLTE, Normal, -40-23°C	66 E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, Normal, 23-55°C (73-130°F)	122 E-6/K	ASTM E 831
Coeff. of linear therm. expansion, Normal, 55-160°C	127 E-6/K	ISO 11359-1/-2
RTI, electrical, 30mil	130 °C	UL 746B
RTI, electrical, 60mil	130 °C	UL 746B
RTI, electrical, 120mil	130 °C	UL 746B
RTI, impact, 30mil	125 °C	UL 746B
RTI, impact, 60mil	125 °C	UL 746B
RTI, impact, 120mil	125 °C	UL 746B



# Crastin® FR684NH1 NC010 (PRELIMINARY)

## THERMOPLASTIC POLYESTER RESIN

RTI, strength, 30mil	140 °C	UL 746B
RTI, strength, 60mil	140 °C	UL 746B
RTI, strength, 120mil	140 °C	UL 746B

### Flammability

Burning Behav. at 60mil nom. thickn.	V-0 class	IEC 60695-11-10
Thickness tested	1.5 mm	IEC 60695-11-10
UL recognition	yes -	UL 94
Burning Behav. at thickness h	V-0 class	IEC 60695-11-10
Thickness tested	0.75 mm	IEC 60695-11-10
UL recognition	yes -	UL 94
Oxygen index	40 %	ISO 4589-1/-2
Glow Wire Flammability Index, 15mil	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 30mil	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 40mil	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 60mil	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 120mil	960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 30mil	750 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 15mil	750 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 40mil	750 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 60mil	750 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 120mil	800 °C	IEC 60695-2-13
Railway classification	R22 -	EN 45545-2
Railway classification rating	HL1 -	EN 45545-2

### Electrical properties

Volume resistivity	>1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	42 kV/mm	IEC 60243-1
Comparative tracking index	600 -	IEC 60112
Comparative tracking index	PLC	UL 746A

### Other properties

Humidity absorption, 80mil	0.1 <sup>[DS]</sup> %	Sim. to ISO 62
Water absorption, 80mil	0.25 <sup>[DS]</sup> %	Sim. to ISO 62
Density	1520 kg/m <sup>3</sup>	ISO 1183

[DS]: Derived from similar grade

### VDA Properties

Emission of organic compounds	39 µgC/g	VDA 277
-------------------------------	----------	---------



# Crastin® FR684NH1 NC010 (PRELIMINARY)

THERMOPLASTIC POLYESTER RESIN

## Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.04 %
Melt Temperature Optimum	250 °C
Min. melt temperature	240 °C
Max. melt temperature	260 °C
Mold Temperature Optimum	80 °C
Min. mold temperature	30 °C
Max. mold temperature	130 °C
Hold pressure range	≥60 MPa
Hold pressure time	3 s/mm
Back pressure	As low as possible MPa
Ejection temperature	170 °C

## Characteristics

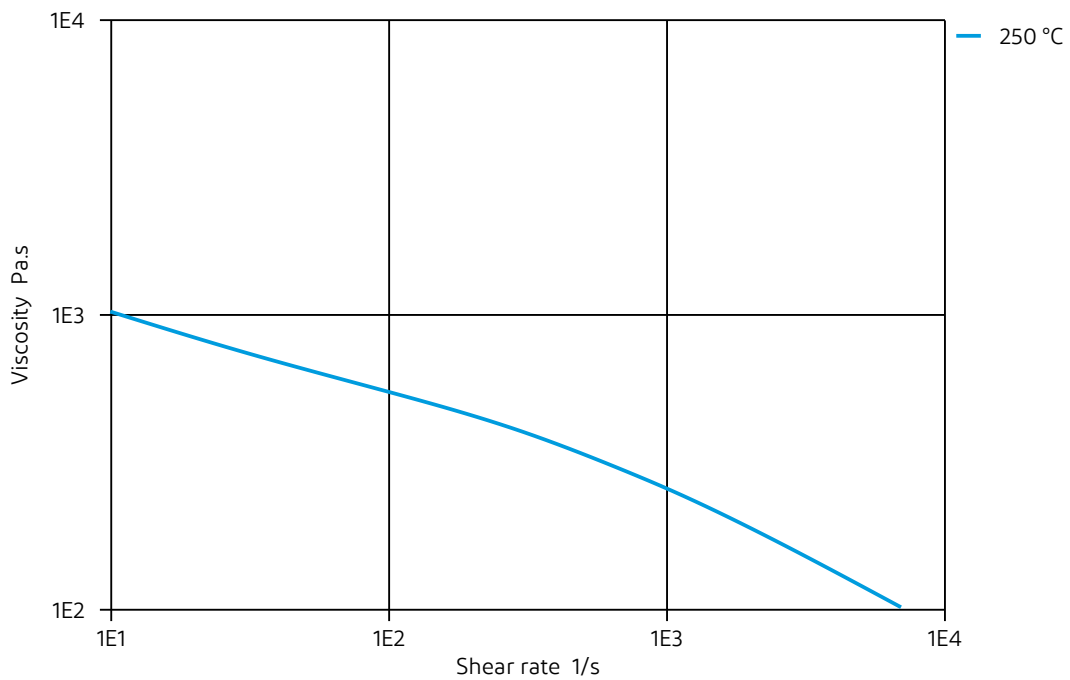
Additives	Flame retardant, Non-halogenated/Red phosphorus free flame retardant
-----------	--



# Crastin<sup>®</sup> FR684NH1 NC010 (PRELIMINARY)

THERMOPLASTIC POLYESTER RESIN

Viscosity-shear rate

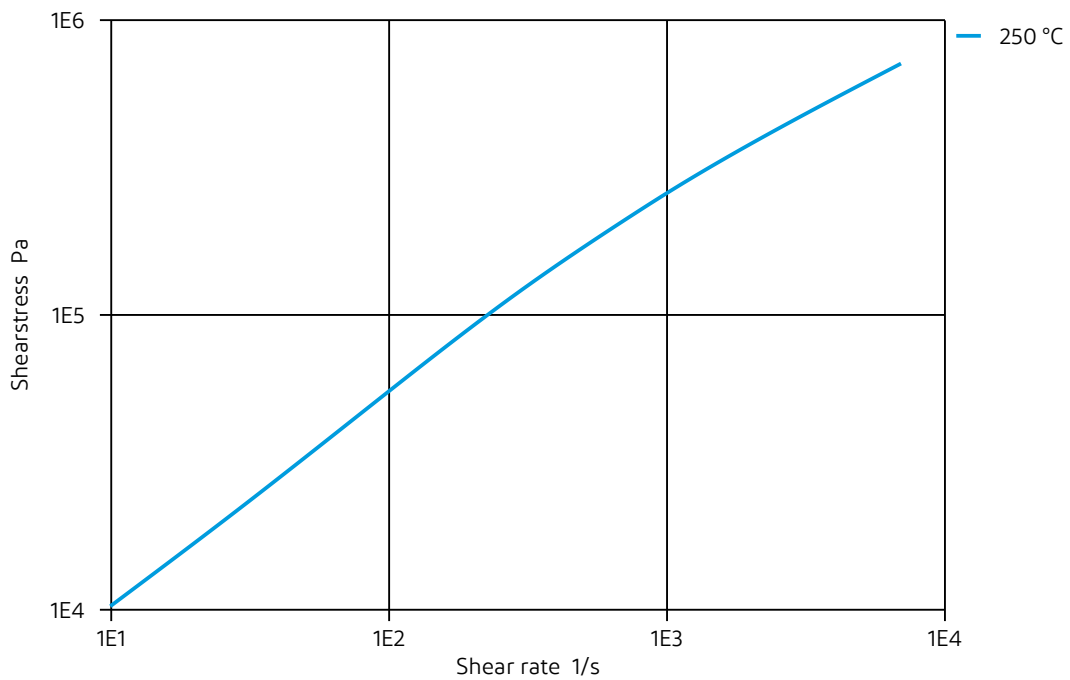




# Crastin<sup>®</sup> FR684NH1 NC010 (PRELIMINARY)

THERMOPLASTIC POLYESTER RESIN

Shearstress-shear rate

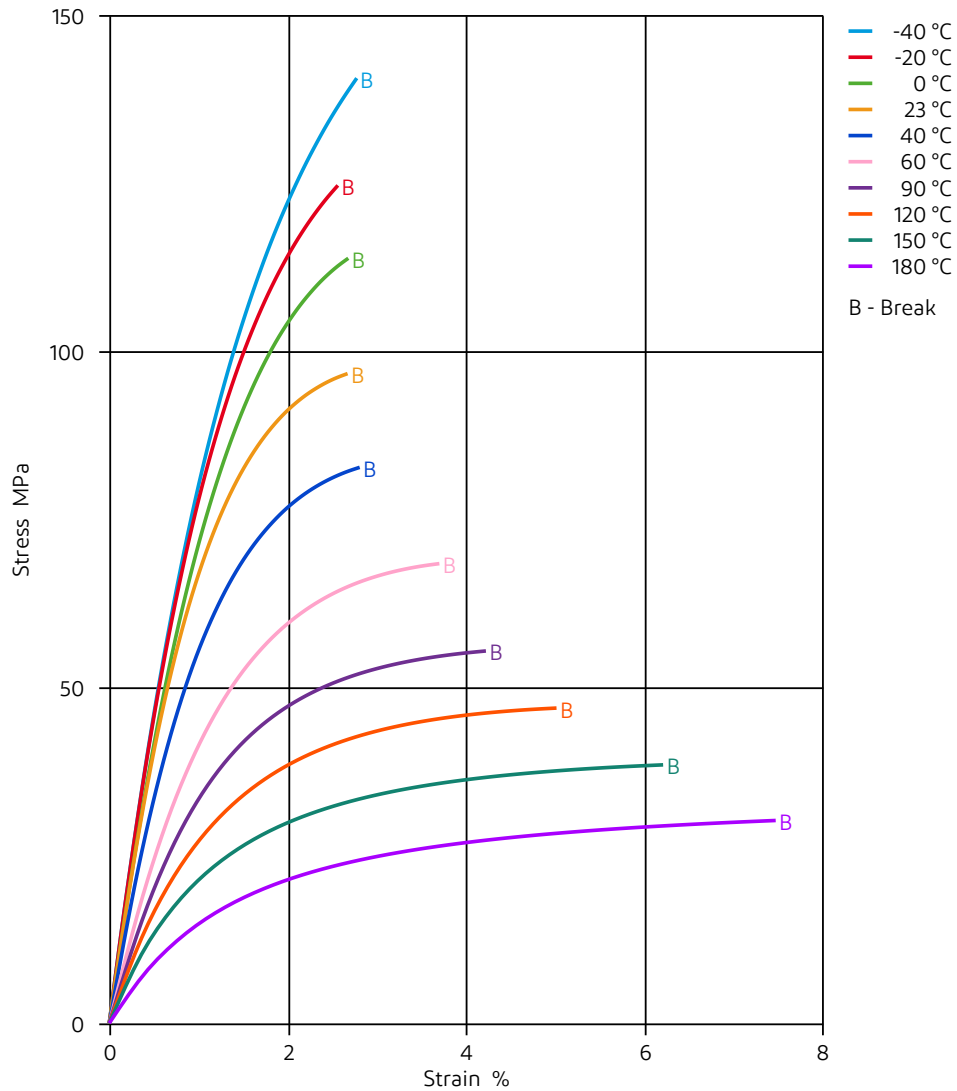




# Crastin® FR684NH1 NC010 (PRELIMINARY)

THERMOPLASTIC POLYESTER RESIN

## Stress-strain

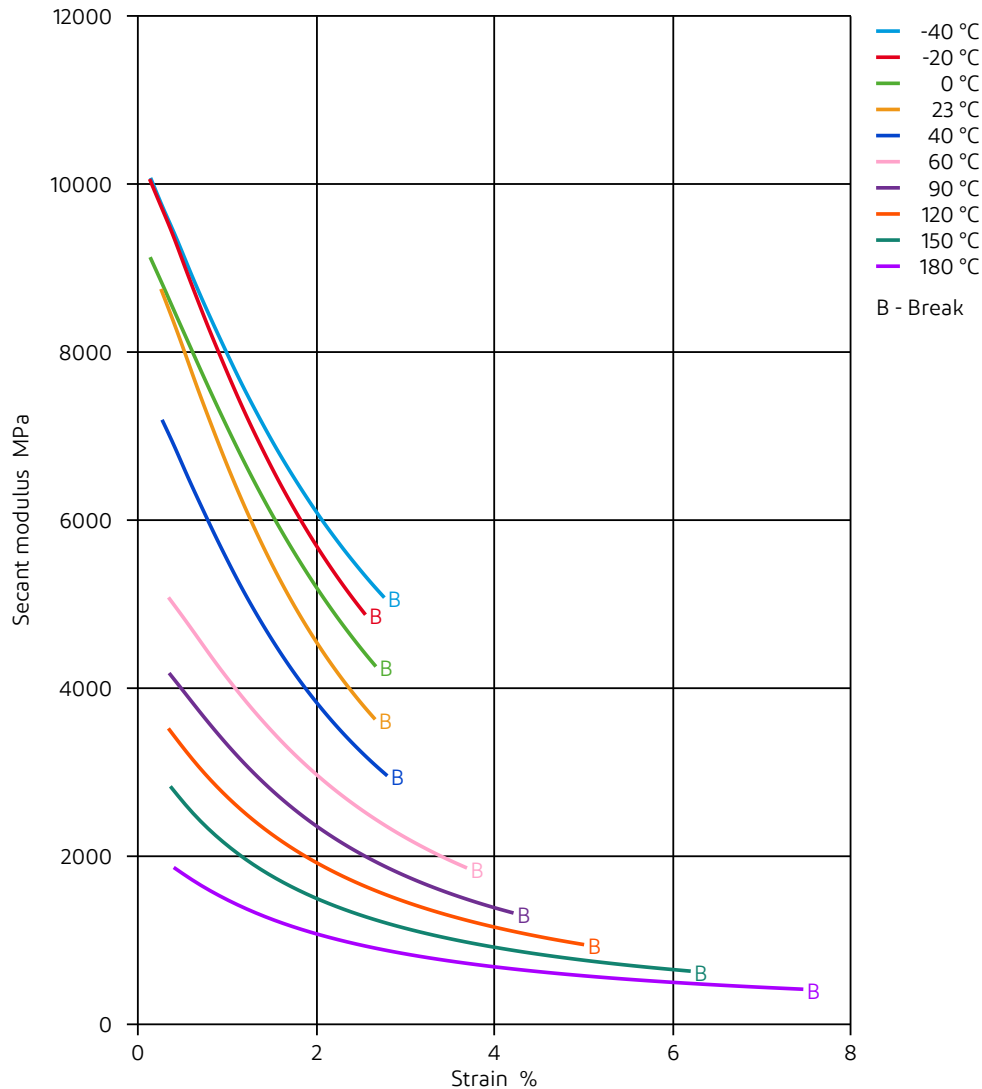




# Crastin<sup>®</sup> FR684NH1 NC010 (PRELIMINARY)

THERMOPLASTIC POLYESTER RESIN

## Secant modulus-strain



Revised: 2021-12-13

Page: 7 of 7

[dupont.com](http://dupont.com)

The above data are preliminary and are subject to change as additional data are developed on subsequent lots.

The information set forth herein is furnished free of charge, is based on technical data that DuPont believes to be reliable, and represents typical values that fall within the normal range of properties. This information relates only to the specific material designated and may not be valid for such material used in combination with other materials or in other processes. It is intended for use by persons having technical skill, at their own discretion and risk. This information should not be used to establish specification limits nor used alone as the basis of design. Handling precaution information is given with the understanding that those using it will satisfy themselves that their particular conditions of use present no health or safety hazards and comply with applicable law. Since conditions of product use and disposal are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information. As with any product, evaluation under end-use conditions prior to specification is essential. Nothing herein is to be taken as a license to operate or a recommendation to infringe on patents.

CAUTION: Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract or other acknowledgement that is consistent with the DuPont policy regarding medical applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative.

DuPont's sole warranty is that our products will meet our standard sales specifications in effect at the time of shipment. Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DUPONT SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR NON-INFRINGEMENT. DUPONT DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

DuPont<sup>™</sup>, the DuPont Oval Logo, and all trademarks and service marks denoted with <sup>™</sup>, <sup>SM</sup> or <sup>®</sup> are owned by affiliates of DuPont de Nemours, Inc. unless otherwise noted.

© 2021 DuPont. All rights reserved.